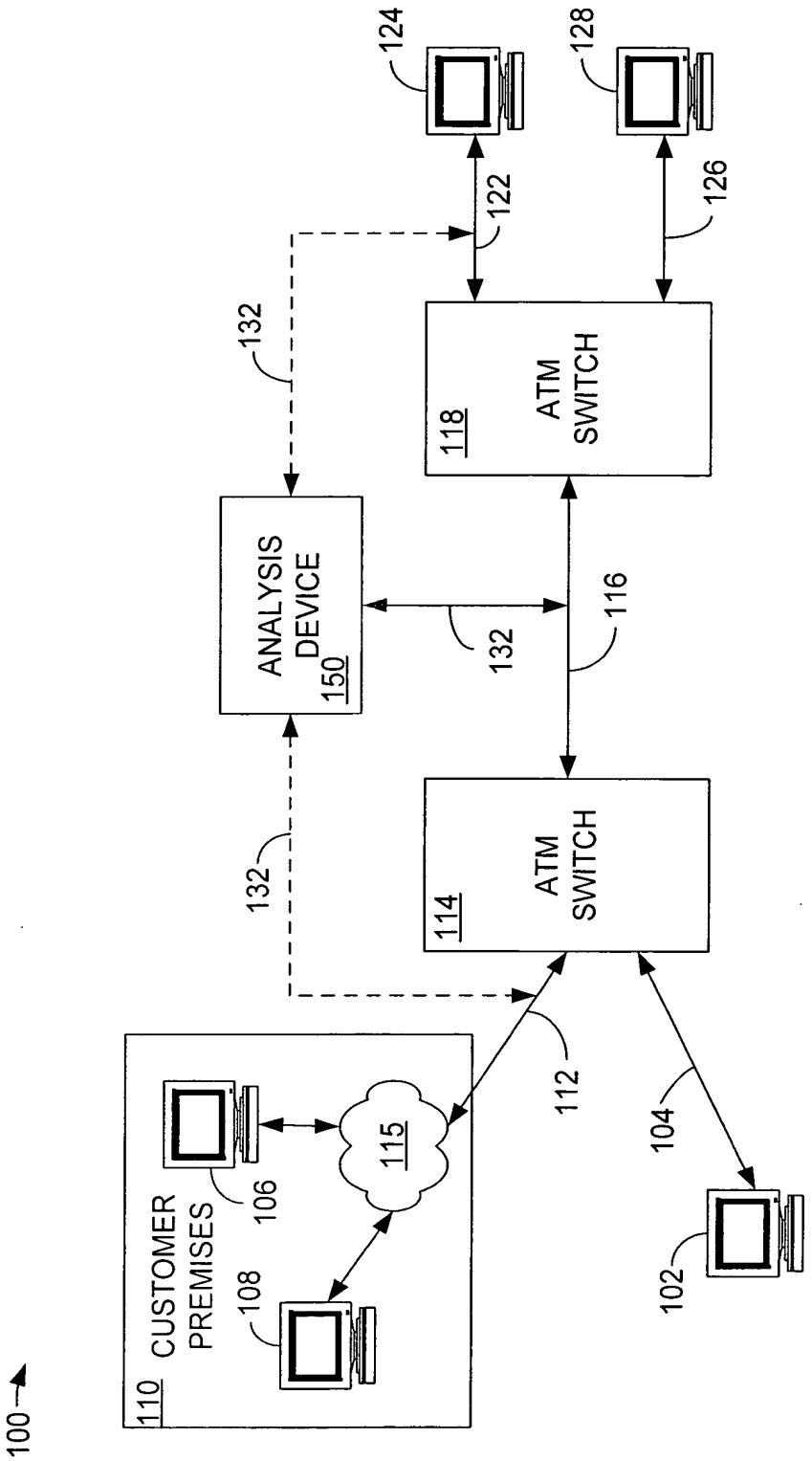
100
110 CUSTOMER PREMISES
106
108
115
112
104
102
114 ATM SWITCH
118 ATM SWITCH
ANALYSIS DEVICE 150
132
116
122
126
124
128

FIG. 1

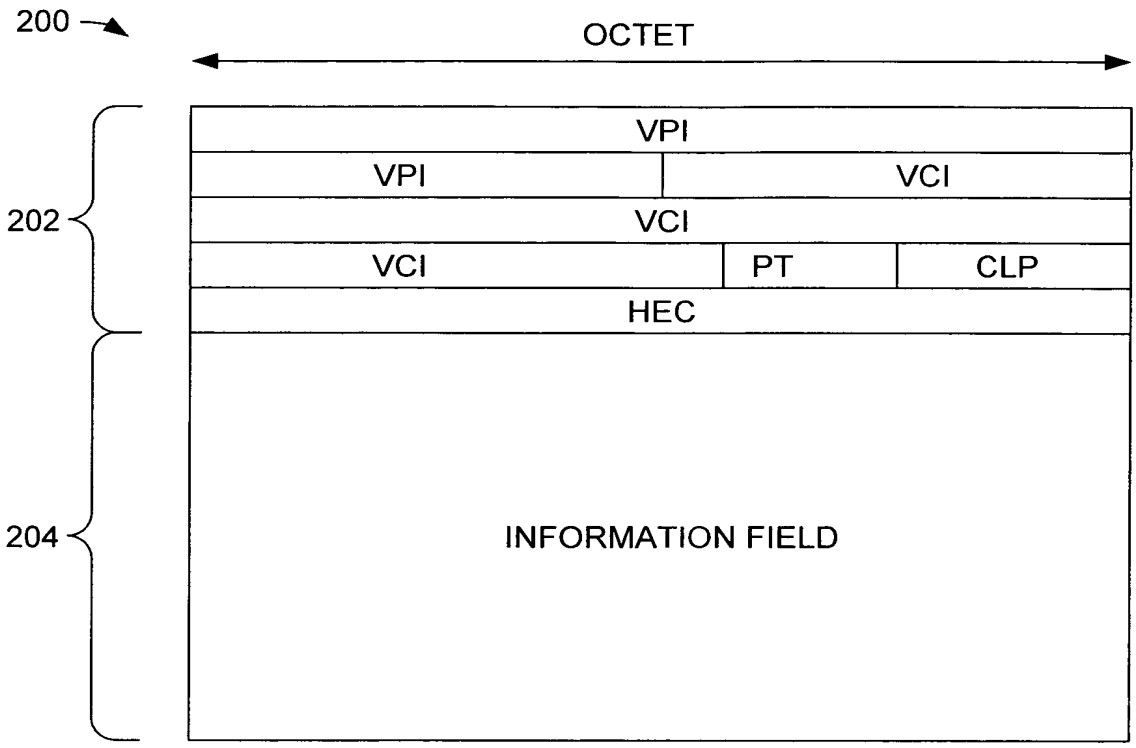
200
OCTET
VPI
VPI
VCI
202
VCI
VCI
PT
CLP
HEC
204
INFORMATION FIELD

FIG. 2A

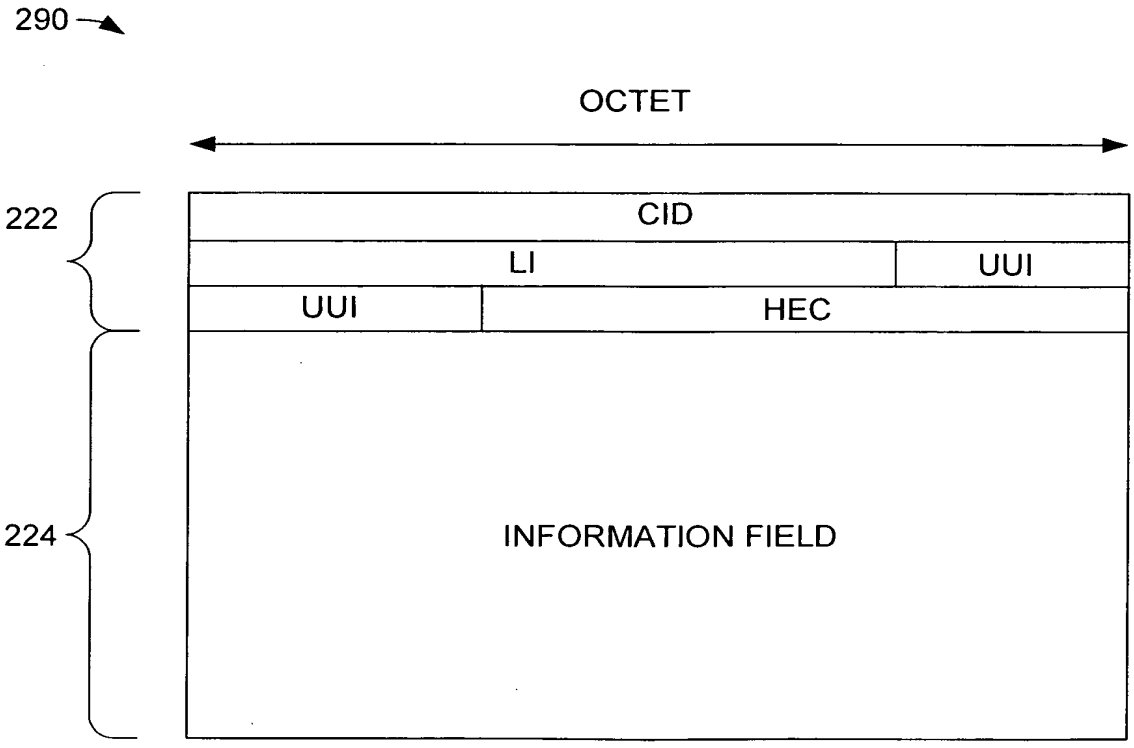
290
OCTET
222
CID
LI
UUI
UUI
HEC
224
INFORMATION FIELD

FIG. 2B

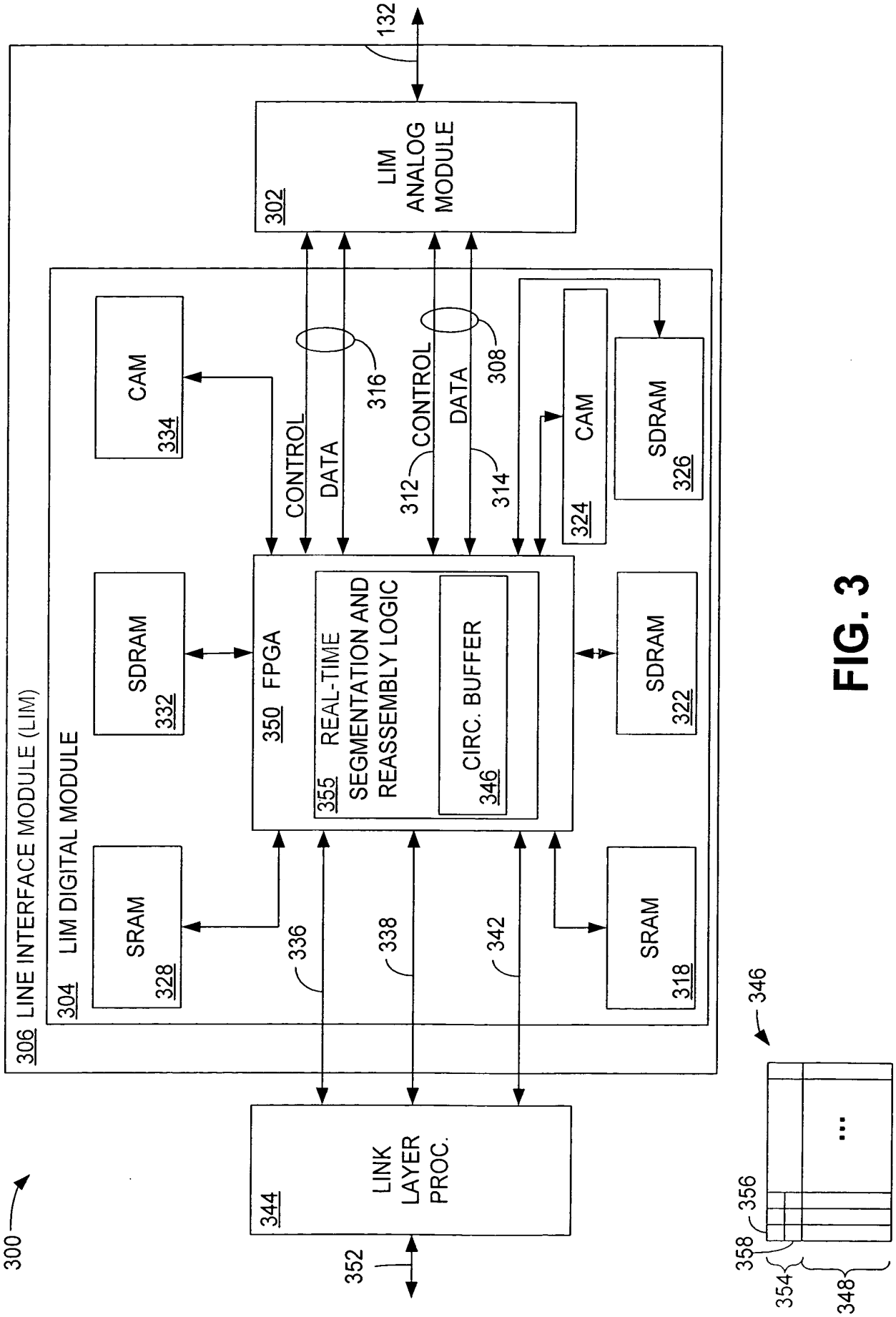
300
306 LINE INTERFACE MODULE (LIM)
304 LIM DIGITAL MODULE
302 LIM ANALOG MODULE
132
CAM 334
SDRAM 332
SRAM 328
350 FPGA
355 REAL-TIME SEGMENTATION AND REASSEMBLY LOGIC
CIRC. BUFFER 346
SDRAM 322
SRAM 318
CAM 324
SDRAM 326
CONTROL
DATA
316
312
314
308
336
338
342
344 LINK LAYER PROC.
352
346
356
358
354
348

FIG. 3

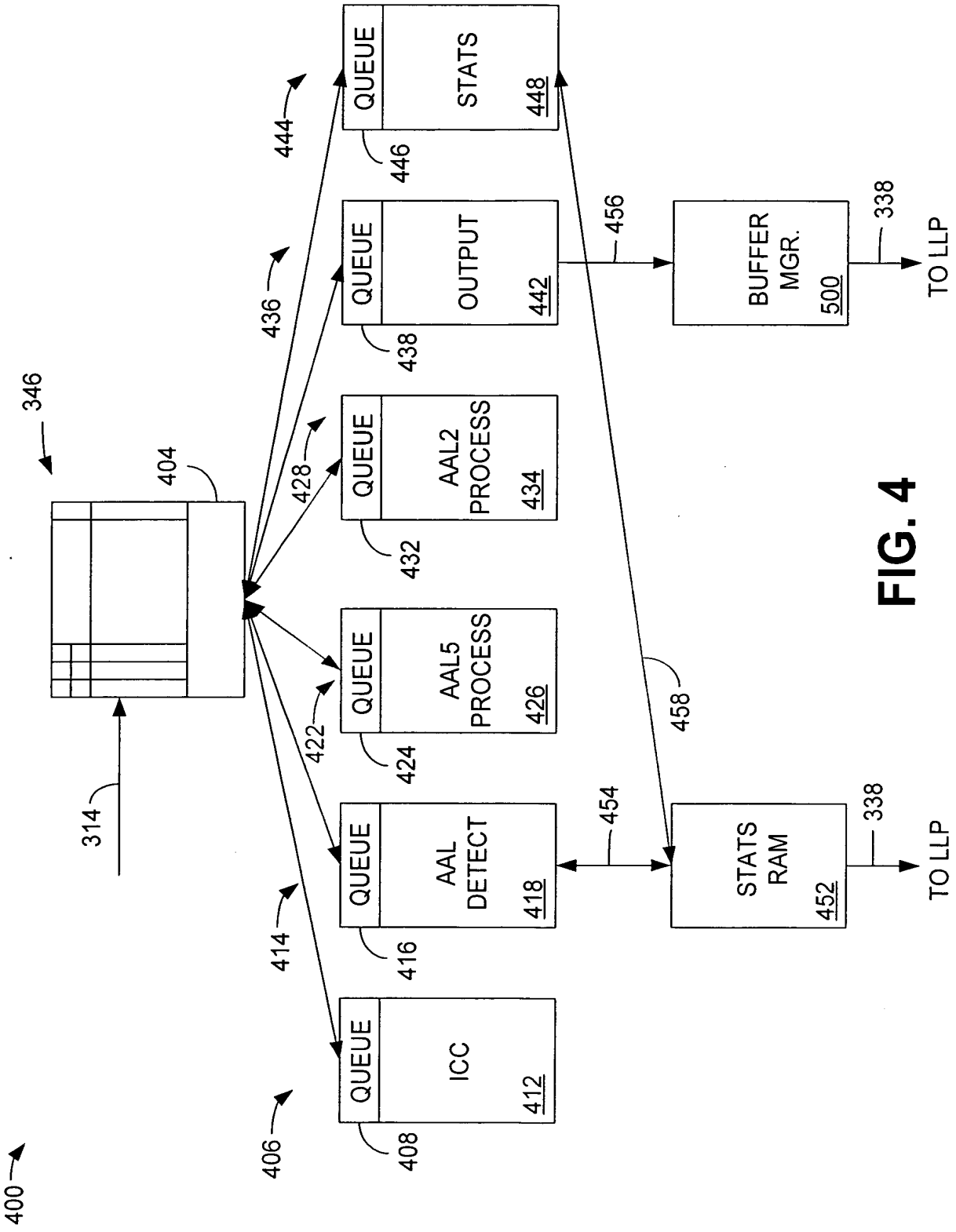
400
346
404
314
406
408
QUEUE
ICC
412
414
416
QUEUE
AAL DETECT
418
422
424
QUEUE
AAL5 PROCESS
426
428
432
QUEUE
AAL2 PROCESS
434
436
438
QUEUE
OUTPUT
442
444
446
QUEUE
STATS
448
454
STATS RAM
452
456
458
BUFFER MGR.
500
338
TO LLP
338
TO LLP

FIG. 4

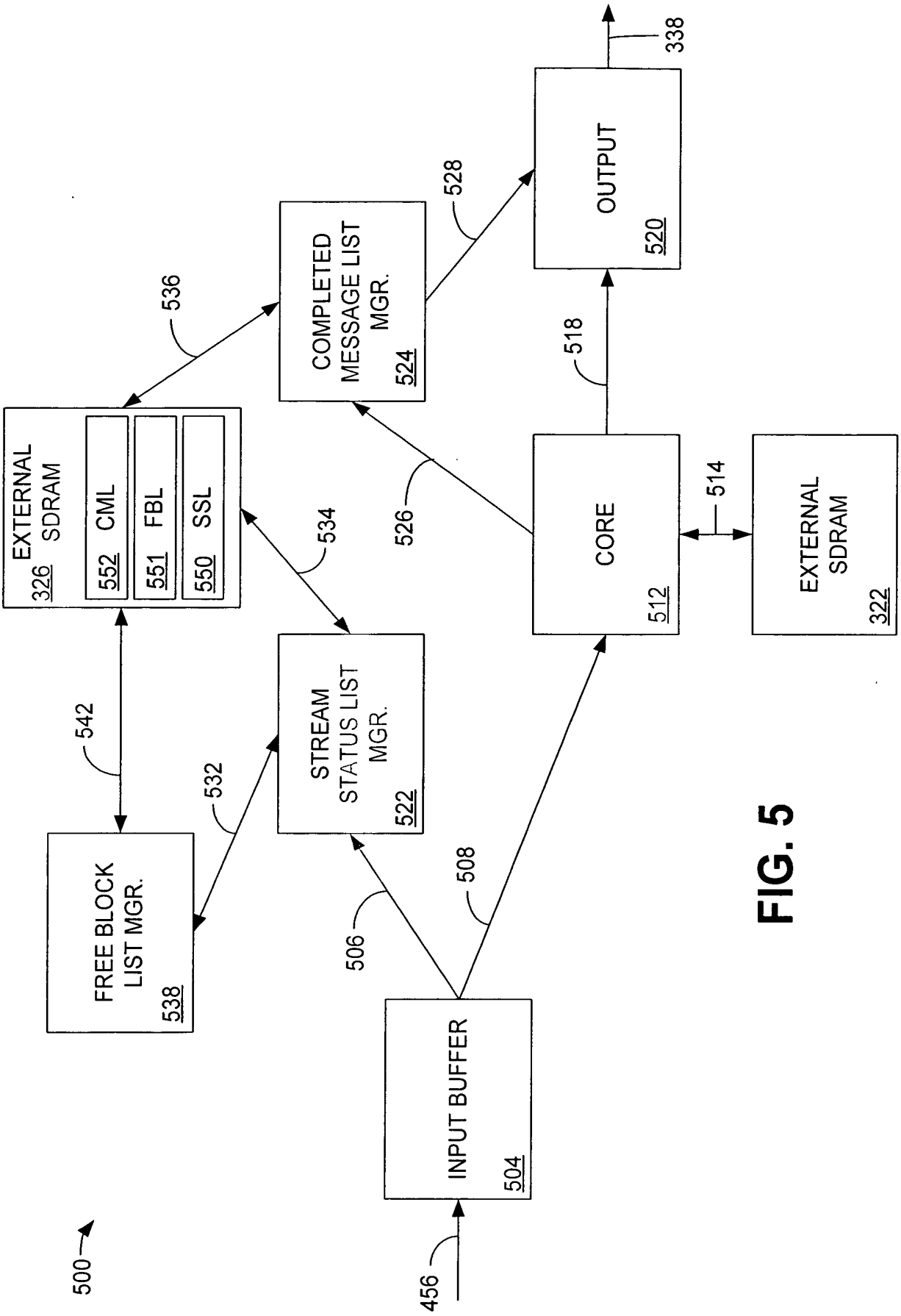
500
456
INPUT BUFFER
504
FREE BLOCK LIST MGR.
538
STREAM STATUS LIST MGR.
522
COMPLETED MESSAGE LIST MGR.
524
OUTPUT
520
338
EXTERNAL SDRAM
326
552 CML
551 FBL
550 SSL
CORE
512
EXTERNAL SDRAM
322
506
508
518
526
528
532
534
536
542
514

FIG. 5

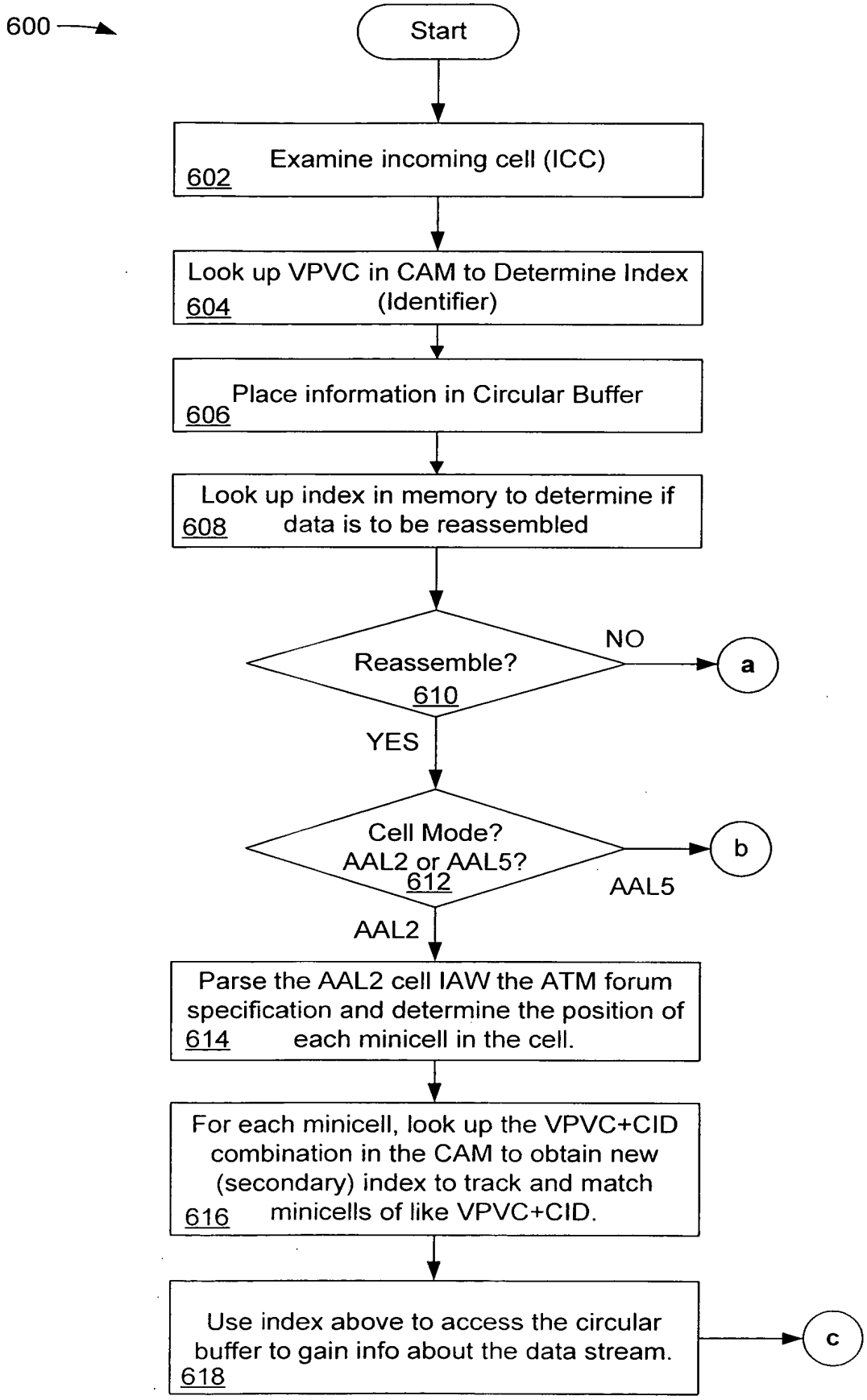
600
Start
Examine incoming cell (ICC)
602
Look up VPVC in CAM to Determine Index (Identifier)
604
Place information in Circular Buffer
606
Look up index in memory to determine if data is to be reassembled
608
Reassemble?
610
NO
a
YES
Cell Mode? AAL2 or AAL5?
612
b
AAL5
AAL2
Parse the AAL2 cell IAW the ATM forum specification and determine the position of each minicell in the cell.
614
For each minicell, look up the VPVC+CID combination in the CAM to obtain new (secondary) index to track and match minicells of like VPVC+CID.
616
Use index above to access the circular buffer to gain info about the data stream.
618
c

FIG. 6A

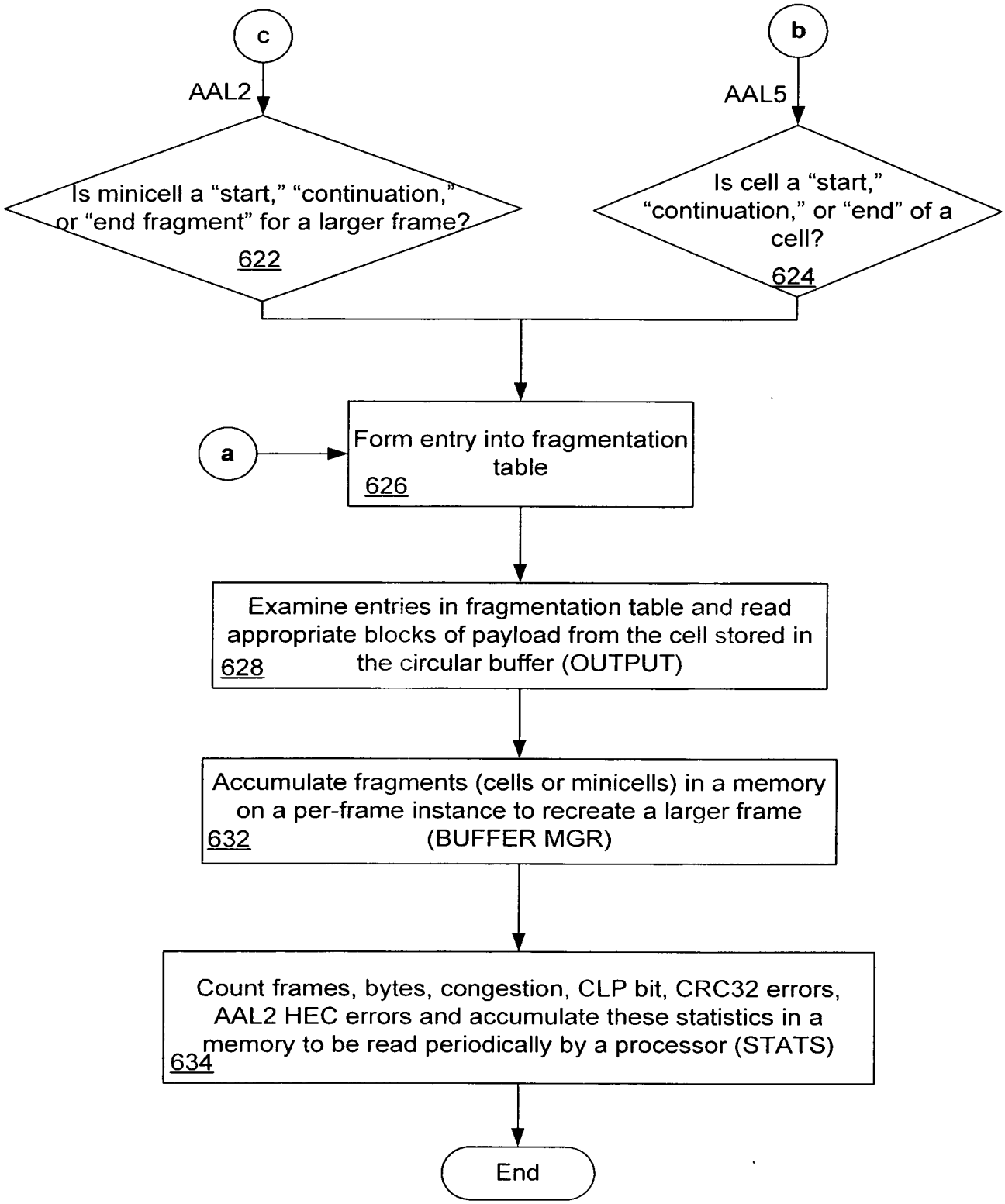
c
AAL2
Is minicell a "start," "continuation," or "end fragment" for a larger frame?
622
b
AAL5
Is cell a "start," "continuation," or "end" of a cell?
624
a
Form entry into fragmentation table
626
Examine entries in fragmentation table and read appropriate blocks of payload from the cell stored in the circular buffer (OUTPUT)
628
Accumulate fragments (cells or minicells) in a memory on a per-frame instance to recreate a larger frame (BUFFER MGR)
632
Count frames, bytes, congestion, CLP bit, CRC32 errors, AAL2 HEC errors and accumulate these statistics in a memory to be read periodically by a processor (STATS)
634
End

FIG. 6B